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OIL OF ROSEMARY.

BY DR. GEORGE R. PANCOAST AND WILLARD GRAHAM, P.C.

The U. S. Pharmacopœia describes oil of rosemary as an oil distilled from the leaves of *Rosmarinus officinalis*, Fam. *Labiata*. Many of the essential oil dealers label it oil of rosemary flowers, when the proper label should read oil of rosemary leaves.

The first mention of its distillation, according to Gildemeister and Hoffman, was made by Arnoldus Villanovus, in the thirteenth century, and since then has been noted for its use in perfumery. One of the first popular perfumes consisted of an alcoholic distillation of the leaves, known as Hungarian water. At times, turpentine was added to cheapen the product.

In commerce there are several kinds of oil, of which at present but two are obtainable in large quantity. The Italian (Dalmatian or Trieste oil) is produced on the islands of the Dalmatian coast, principally on the island of Lesina. The French oil is mostly distilled in Southern France, and is much higher in price.

The oil is a colorless or pale yellow liquid, having a warm, somewhat camphoraceous taste, being used in perfumery and occasionally medicinally as a stimulant and carminative, and externally in liniments.

Gildemeister and Hoffman give the following constants: Specific gravity at 15° C., 0.900 to 0.920. Optical rotation + 1° 45' to + 5°. Soluble in 1 or more parts of 90 per cent. alcohol, and sometimes with 2, but often as many as 10 parts of 80 per cent. alcohol.

Schimmel gives the following constants:

	Dalmatian.	French.
Specific gravity at 15° C.	0'900 to 0'915	0'900 to 0'915
Optical rotation	+ 1° to + 4°	+ 1° to + 11°

Both the Dalmatian and the French oil should give a clear solution with 1 part of 90 per cent. alcohol and 10 parts of 80 per cent. alcohol. The authors have examined in the past two years about fifteen samples of oil submitted to them for examination, of which they give the following data :

Marked.	Specific gravity 15° C.	Bornyl Acetate.	Optical Rotation.
Dalmatian	0'895		
"	0'897		+ 30° 59'
"	0'903		+ 1° 36'
French	0'903		+ 11° 37'
" extra	0'907	3'0	+ 9° 12'
"	0'903	3'8	+ 6° 43'
" flowers	0'888	8'3	+ 5° 45'
" Eperlè	0'887	7'4	+ 0° 50'
"	0'903	4'0	+ 5° 45'
" Eperlè	0'910		+ 4° 36'
"	0'884	3'4	+ 18° 30'
" Eperlè	0'888	4'9	+ 18° 30'
"	0'899	3'7	+ 0° 30'
" Eperlè	0'890	3'1	- 2° 53'
Dalmatian	0'904		+ 2° 36'

Solubility in 95 per cent. alcohol: Nos. 1 to 10, in all parts; No. 11, in 5 parts, no more; No. 12, in 3 parts, no more; Nos. 13, 14 and 15, in all parts.

Solubility in 80 per cent. alcohol: Nos. 5 and 9, $\frac{1}{2}$ part; Nos. 6, 10 and 13, 1 part; Nos. 7, 8, 11, 12 and 14, not in 10 parts; No. 15, in 5 parts.

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THE MYDRIATIC ALKALOIDS.¹

By J. O. SCHLOTTERBECK.

A little over fifty years ago Pasteur, while working upon racemic acid, published his classic researches upon the relations that may exist between crystalline form, chemical composition and optical activity. Briefly stated, by making a double sodium ammonium

¹Address of the Chairman of the Scientific Section of the American Pharmaceutical Association, August, 1903.

salt of racemic acid and crystallizing below 28° C. he obtained large rhombic crystals, part of which possessed right hemihedral faces and part left hemihedral faces. In other words one crystalline form was an exact mirror picture of the other. By isolating these two forms mechanically and decomposing them separately he obtained two tartaric acids of identical composition, of which the one with right hemihedral faces turned the plane of polarized light the same number of degrees to the right as the one with the left hemihedral faces turned it to the left. By combining solutions of equal quantities of these two optically active acids he regenerated racemic acid which is optically inactive. The same results were nicely accomplished by means of the alkaloids cinchonine and quinine. When racemate of cinchonine was allowed to crystallize from its solution Pasteur noticed that the cinchonine salt of l-tartaric acid separated out first, while the salt of the d-acid remained in solution. In the case of quinine racemate the opposite results were observed, viz., the salt of d-tartaric acid separated first. Further, by inoculating a solution of the acid ammonium salt of racemic acid with the fungus *Penicillium glaucum*, the salt of d-tartaric acid was selected for destruction, leaving the salt of l-acid in solution.

Since these isomeric substances differ from each other principally in their physical properties they first received the name physical isomers. Later this term was supplanted by the more appropriate term geometrical or stereo-isomers.

Pasteur and others attempted to explain the phenomena of stereo-isomerism by a difference in the arrangement of the atoms of a compound in space, but they were at a loss to know just how these atoms or groups were to be placed. In 1874 two investigators, Le Bel and van't Hoff, working independently, ascribed optical activity and the isomerism of optically active carbon compounds to the presence in the molecule of one or more asymmetric carbon atoms, *i. e.*, carbon atoms that are linked with four atoms or groups that are all different from each other. While this theory was received with hesitation and much opposition at first, it can be safely said that not a single optically active carbon compound is known which does not bear out this hypothesis. Not all compounds, containing asymmetric carbon atoms, however, are optically active.

Among the stereo-isomeric carbon compounds none are of greater interest or importance than some of the plant alkaloids.

Thanks to investigations which have been completed during the past year both in Europe and America, there is now absolute proof that the alkaloids atropine and hyoscyamine are stereo-isomers and that the former is the racemic form of the latter.

Ladenburg long ago proved that these two alkaloids are isomers with the formula $C_{17}H_{23}NO_3$. The optical activity of hyoscyamine was recognized by a number of investigators at about the same time, but the exact rotation, $(\alpha)_D = -21.8^\circ$, was first determined by Ladenburg. In the case of atropine there was much discussion regarding its behavior toward polarized light, owing to the difficulty of isolating it in a perfectly pure state. Not until within comparatively recent years has the optical inactivity of atropine been universally accepted as a fact.

In an elaborate series of researches upon the constitution of these alkaloids Ladenburg showed that they were both tropic acid esters of the base tropine, *i. e.*, he succeeded in splitting them both into tropine and tropic acid by means of saponification. This, together with the well-known fact that hyoscyamine is most easily converted into atropine, led to the conclusion that atropine is the racemic form of hyoscyamine; though some proofs were still wanting. This, of course, implies the existence of the complement of ordinary or l-hyoscyamine, viz., d-hyoscyamine, but this had never been isolated or prepared. Ladenburg made many attempts to resolve atropine into its optically active components along the line of Pasteur's work, but only partially succeeded, inasmuch as he obtained what he called a right atropine, which must have been, in the light of our recent knowledge, a mixture of atropine and d-hyoscyamine. Up to six months ago there was no evidence in literature of the existence of such a compound as d-hyoscyamine.

It was at this time that an interesting and important pharmacological investigation bearing directly upon this subject was being pursued by Dr. Cushny, of the University of Michigan. Clinical and laboratory reports upon the action of these two bases in the body are not wanting, but they are so conflicting and so widely at variance with each other that no reliance can be placed upon them. Some reported hyoscyamine as inert, others that its action is identical with atropine, while still others claim that their actions are widely different. It is very evident that some of these operators were working either upon mixtures of alkaloids or with

saponification products. Therefore, when atropine and hyoscyamine of undoubted authenticity and purity were prepared in the course of an investigation upon the alkaloids of *Scopola* and *Belladonna*, which was pursued at the request of the Committee of Revision of the United States Pharmacopœia, the opportunity for a scientific comparative pharmacological study of these bases was eagerly embraced and the necessary material placed at the disposal of Dr. Cushny. I have followed the progress of his investigation with great interest and can say that the results obtained are no less remarkable than the care, skill and accuracy bestowed upon the work. The study has extended over more than a year's time, and the results which are very briefly summarized here will be given in detail in an original article which is now in press.

I. Upon the central nervous system of mammals atropine acts exactly like a hyoscyamine, both in the nature and in the intensity of action. It also acts like hyoscyamine upon the heart and the terminations of the motor nerves in the frog.

Assuming that atropine consists of equal parts of l-hyoscyamine and the hypothetical d-hyoscyamine, it follows from these results that the latter alkaloid will have the same action upon these organs and upon these animals as atropine and l-hyoscyamine.

II. Atropine acts more powerfully upon the reflexes of the spinal cord in the frog than l-hyoscyamine.

Using the same basis of argument, this indicates that d-hyoscyamine has a more powerful action upon the spinal cord of the frog than its complement l-hyoscyamine.

III. L-hyoscyamine is twice as powerful as atropine upon the nerve ends of the salivary glands, heart and pupil in mammals. This means that the unknown d-hyoscyamine, when found, will show little or no action upon these nerve ends.

The argument is made that if atropine is really the racemic form of ordinary hyoscyamine, then a d-form must exist, and that the pharmacological action of atropine is the sum total of the actions of its optically active modifications, since it is probable that when atropine goes into solution it does not exist as such, but as a simple mixture of d- and l-hyoscyamine.

These deductions had been arrived at scarcely a fortnight when the excellent and highly important article upon the conversion of atropine into d- and l-hyoscyamine by Amenomiya appeared. A

résumé of this magnificent research, which was only accomplished after many failures, may not be without interest :

Nearly pure atropine of the market, rotating $(a)_D = -1.39^\circ$, was saponified by boiling with water under reflux condenser for about twenty-four hours. The reaction product was reduced to small volume, strongly acidified with H_2SO_4 to hold the base tropine in solution, and repeatedly shaken out with ether. This removed mainly tropic acid.

The acid, aqueous liquid remaining was carefully neutralized, concentrated to small volume, mixed with powdered CaO and anhydrous $CaSO_4$, dried and extracted with ether. Upon evaporation of the ether, tropine was left as a white crystalline residue.

The i-tropic acid, which was first obtained, was split into its active components d- and l-tropic acids in a manner similar to that employed by Pasteur in the splitting of racemic acid. The quinine salt of *inactive* tropic acid was prepared and from the solution, upon concentrating, the d-tropate of quinine separated first, leaving the l-tropate in solution. The latter was recovered from the mother liquor after concentrating. From these two salts the respective acids were easily obtained by decomposing with stronger acid and then purifying. Prepared in this manner the d-tropic acid rotated $(a)_D = +71.30^\circ$ and the l-tropic acid $(a)_D = -72.75^\circ$.

Since Gadamer showed that the cause of optical inactivity of atropine and the activity of hyoscyamine resided in the tropic acid nucleus and not in the tropine, it appeared natural that d-hyoscyamine could be prepared by coupling d-tropic acid with tropine. This was in fact accomplished by mixing nearly equal quantities of tropine and d-tropic acid with 25 to 35 volumes of 5 per cent. HCl and evaporating to about 3 volumes. The solution was made alkaline and repeatedly shaken out with ether, which took out principally the new base which has been so long sought. Purification was effected by means of the gold salt, decomposing with H_2S and crystallizing. The synthesis of l-hyoscyamine was accomplished in the same manner by using the l-tropic acid instead. As to the success of this research it need only be said that a d-hyoscyamine was obtained which rotated $(a)_D = +23.15^\circ$ and a l-hyoscyamine which rotated $(a)_D = -24.12^\circ$.

Now that the preparation of d-hyoscyamine had been accomplished, Dr. Cushny was naturally very anxious to verify his

predictions regarding its physiological action, and accordingly made a request for some of the new base. Through the kindness of Prof. Gadamer, under whose direction this admirable piece of work was conducted, 0.050 gm. were placed at his disposal. No experiments could be made upon the central nervous system of mammals or upon the heart and terminations of motor nerves of the frog because of the small amount of material. In all the tests which he made his expectations were fully realized, since he found: First, that d-hyoscyamine, as predicted, has a much more powerful action upon the spinal cord of the frog than l-hyoscyamine; and, second, that it is only one-fifteenth to one-sixteenth as powerful as l-hyoscyamine upon the nerve terminations in the salivary glands, heart and pupil of mammals, or nearly inert.

These positive results have suggested several interesting questions. One of these has reference to the existence of these products in the living plant. It has been held by Will and others that l-hyoscyamine is the parent of atropine. If the hypothesis that atropine when brought into solution exists, not as such, but as a mixture of its optically active modifications, then there is a possibility that d-hyoscyamine is associated with l-hyoscyamine in the plant juices and that the racemic form atropine is not formed until the drug is dried.

Do not these researches shed light upon the discrepancy noted in recent reports upon the action of hyoscyamine, in which it was claimed that C. P. hyoscyamine Merck was found to be physiologically inert? There is a possibility that these investigators were working with either d-hyoscyamine or perhaps with the saponification product of atropine or hyoscyamine, viz. tropine.

The full report of Dr. Cushny shows that the action of atropine and l-hyoscyamine is in the same direction but with different intensity upon certain organs. Therefore, could not these alkaloids be used one for the other, it being only a matter of dosage which is always regulated by the physician?

STANDARD SIEVES.¹

BY JOSEPH P. REMINGTON.

For many years it has been the custom in the drug-milling trade to designate the fineness of powders by the grade of the sieve through which the powder is sifted. Our Pharmacopœia, for several revisions, adopted the system in use by wire-cloth manufacturers, who designate the grade of the wire cloth by the number of the meshes in the linear inch.

The United States Pharmacopœia of 1890 directs five degrees of fineness of powder, as follows :

A *very fine* powder should pass through a sieve having 80 or more meshes to the linear inch—No. 80 powder.

A *fine* powder should pass through a sieve having 60 meshes to the linear inch—No. 60 powder.

A *moderately fine* powder should pass through a sieve having 50 meshes to the linear inch—No. 50 powder.

A *moderately coarse* powder should pass through a sieve having 40 meshes to the linear inch—No. 40 powder.

A *coarse* powder should pass through a sieve having 20 meshes to the linear inch—No. 20 powder.

In conducting experiments upon fluid extracts for the Revision Committee, the writer was struck with the difference in the appearance of powders sold by different manufacturers, labeled No. 30 powder. The difference was easily perceptible to the naked eye, and an investigation and correspondence with the various manufacturers of wire cloth in the United States revealed the cause of the discrepancy. These manufacturers cheerfully responded to inquiries, and were of much assistance to the writer.

The *thickness of the wire* used in making the sieve-cloth should always be specified, if uniform results are to be obtained. When our Pharmacopœia designates a No. 20 powder, it should state, in addition to the directions, that the sieve should contain 20 meshes in each linear inch ; that the wire should be gauge No. 28, and, of course, the gauge of the wire should be given for each degree of fineness of the wire-cloth. According to standard gauges adopted by the Wire Cloth Manufacturers' Association, March, 1899, the

¹ Read at the annual meeting of the Pennsylvania Pharmaceutical Association, June, 1903.

mesh in wire-cloth is the distance from the centre to the centre of the wire per linear inch. But when we turn to the list of the grades manufactured, it is discovered that for No. 20 mesh of brass and copper-wire cloth, twelve different thicknesses of wire are listed, a No. 20 mesh and No. 23 wire costing \$2.50 per square foot, and going up regularly in the list to No. 34 wire, which is 25 cents per square foot. It will be noticed that there is a great difference in price—one being ten times the price of the other. No. 20 iron or steel wire cloth made from No. 24 gauge wire is priced at 62 cents per square foot, while the same No. 20 wire cloth, when made of No. 36 wire, is priced at 9 cents per square foot. It is, of course, understood that the higher numbers refer to wires of smaller diameter.

It can easily be seen that a No. 20 sieve made with No. 24 gauge wire would not let nearly as much powder through its meshes as would a No. 20 sieve made with No. 36 wire. The illustrations herewith presented will make this fact clear. No. 20 sieves made with thick wire would really yield a No. 30 powder. Samples are shown herewith which demonstrate the above facts.

Drug millers and manufacturers of pharmaceutical preparations have probably been aware of these facts, but it is to be regretted that, up to this time, they have never engaged the attention of revision committees of the Pharmacopœia.

The Clinton Wire Cloth Company, the Estey Wire Works Company, George A. Williams & Sons, Howard and Morse, and the DeWitt Wire Cloth Company, and others, have all agreed that the following grades should be regarded as the standard:

- 12 mesh, No. 24 wire.
- 20 mesh, No. 28 wire.
- 30 mesh, No. 31 wire.
- 40 mesh, No. 33 wire.
- 50 mesh, No. 35 wire.
- 80 mesh, No. 38 wire.

And inasmuch as these grades represent what is usually sent on orders, when not otherwise designated, it would be most convenient and desirable to establish such for the national standard.

It is not intended by this paper to reflect in the least upon the honesty of either the manufacturer of wire cloth or the drug miller. The question of the durability of the cloth and the character of the

powder which is to be sifted, and particularly its specific gravity, all have a bearing in influencing the drug miller to seek a heavier or lighter gauge wire for a special purpose, but there is no reason why, for pharmaceutical purposes, a standard gauge should not be specified in the Pharmacopœia.

SYRUP OF CALCIUM LACTOPHOSPHATE.¹

BY CHARLES H. LAWALL.

In September, 1901, the author presented a paper upon the subject of Easton's syrup, in which the difficulties attending the preservation of this preparation were obviated by a simple modification of the formula, whereby it was divided and the concentrated solution, or glycerol, held in readiness to mix with the syrup at any time, thus insuring an unaltered preparation.

While the necessity for a similar change in the formula for syrup of calcium lactophosphate is not nearly so apparent as it was in the former case, still, it is believed that such a modification would prove of benefit, and undoubtedly it affords a certain convenience in dispensing, which is very satisfactory to the druggist, while it, as in the former case, insures the freshness of the preparation at the time of dispensing.

Syrup of calcium lactophosphate does not have the same tendency to caramelization that Easton's syrup has, but it does undergo some kind of a decomposition when kept in stock for more than a very few weeks, and acquires a peculiar disagreeable odor—very much unlike the freshly made preparation. This, I believe, is partly due to the small amount of orange-flower water which is present (only 25 c.c. in 1,000 c.c.), the amount being scarcely enough to afford the characteristic odor, which is evidently desired, and certainly that small a quantity would have no influence on the flavor. A far better plan would be to either drop the orange-flower water altogether, or else add enough to make its use worth while.

With the view of overcoming this difficulty the following formula was tried and found to work so satisfactorily in actual practice that the results were deemed worthy of publication. To make 1,000 c.c.

¹ Read at the annual meeting of the Pennsylvania Pharmaceutical Association, June, 1903, and contributed by the author.

of the syrup, the same quantities of the active ingredients are taken as in the official process, but manipulation is slightly different.

Take of

Calcium carbonate	25 grammes.
Lactic acid	60 c.c.
Phosphoric acid	36 "
Water, q. s.	250 "

Mix the lactic acid with 100 c.c. water in an evaporating dish, and add the calcium carbonate gradually, so as to avoid causing too violent effervescence.

When solution has been effected, place the dish upon the water bath and warm gently. Then add the phosphoric acid, stirring constantly. This manipulation will result in the production of a limpid, colorless solution unaccompanied by the first precipitation, which takes place when the operation is carried out according to the official directions.

By making up the volume of this solution to 250 c.c. and filtering, a concentrated permanent preparation is afforded, which may be held in readiness for preparing the official syrup at any time by the following procedure:

Take of

Conc. solution calc. lactophos.	250 c.c.
Orange-flower water	25 "
Syrup	725 "

In the author's estimation a much more satisfactory preparation is afforded by either substituting plain syrup, or syrup of orange flowers, for the syrup and orange-flower water in the foregoing directions. When the plain syrup is used in the proportions of 3 volumes of syrup to 1 volume of conc. sol. calcium lactophos., a pleasant, acidulous, permanent preparation results.

When syrup of orange flowers is used in like proportions, a preparation which is much more pleasant is afforded, but which in time becomes somewhat deteriorated, probably by the action of the acid upon the orange-flower water.

At any rate, by this method of using the concentrated solution it is possible to send out a fresh preparation upon five minutes' notice, which is a very desirable improvement.

GRANULAR EFFERVESCENT SALTS.¹

BY E. FULLERTON COOK, P.D.

The increase in the use of granular effervescent salts has been so marked within recent years, and the process of manufacture so greatly simplified, that every retail pharmacist should be independent of the manufacturer for this class of preparations. The fact that a nauseous dose of medicine may be taken with comparative ease when mixed with an effervescent drink or one highly charged with carbon dioxide, has long been known, and the introduction of effervescent salts has made it possible to take advantage of this principle without the inconvenience of obtaining a previously carbonated water. This fact was soon recognized, but for years the price was almost prohibitory because of the expensive method of manufacture, and since it required elaborate apparatus for recovering the alcohol, its preparation was entirely outside the province of the retail pharmacist.

In the former method the powders, consisting of tartaric acid and sodium bicarbonate in the proper proportion, together with the medicating substance, are thoroughly dried and powdered, and when uniformly mixed, moistened with alcohol and forced through a suitable sieve, to divide the pasty mass into granules; they are then thoroughly dried.

As the powders are only moistened with alcohol, in which they are practically insoluble, the finished preparation retained its property of effervescence when dissolved in water; but the use of alcohol, much of which was lost in the process, increased the cost and prevented the preparations from gaining great popularity.

Within a comparatively short time, however, this method has been entirely superseded by a much less expensive and more simple process, which takes advantage of the one molecule of water of crystallization in citric acid for supplying the desired moisture. Enough of the tartaric acid is replaced by citric acid to make a pasty mass of the powders when they are subjected to a temperature which will liberate the water of crystallization. In the large laboratory, when a suitable formula has been selected, the mixed powders are placed in a steam-jacketed, porcelain-lined kettle, kept at the

¹ Read at the annual meeting of the Pennsylvania Pharmaceutical Association, June, 1903, and contributed by the author.

proper temperature, and the whole mass manipulated until it becomes uniformly moistened; it is then passed through a suitable sieve and finally dried in hot-air closets.

When the retail pharmacist, however, attempts to make a granular effervescent salt by the same method, but with the apparatus usually at hand, he meets with the difficulty of securing a properly regulated heat, and the salt does not become uniformly moist; the surfaces which are exposed to the air become dry before the remaining portion is moistened, and the resulting granular salt is often not satisfactory.

While the expert may obtain a nicely granulated preparation by the use of a dish and open fire, yet the experience with classes in the college laboratory has shown that it is rather the exception that uniformly good results can be obtained by this method, while the modified manipulation, suggested in this paper, yields good results, even in the hands of a novice, and is adapted to the use of a retail pharmacist.

Numerous experiments have shown that a mixture of sodium bicarbonate, tartaric acid and citric acid, in a proportion which will produce a solution of neutral sodium tartrate and sodium citrate, and so adjusted that just sufficient moisture will be present to produce a pasty mass, without marked effervescence when the whole is heated, may be taken as the basis of many medicated granular effervescent salts, and good results obtained, even when the proportion of medicating substance varies considerably, the precaution always being observed, however, to thoroughly dry every addition. The following mixture fulfils these conditions:

BASIS FOR EFFERVESCENT SALTS.

Sodium bicarbonate, dried and powdered	530 grammes.
Tartaric acid, dried and powdered	280 "
Citric acid, uneffloresced crystals	180 "

Powder the citric acid and add the tartaric acid and sodium bicarbonate.

This basis may be mixed with many of the medicaments commonly used in the form of granular effervescent salts, in the proportion which will properly represent their doses, and such substances as sodium phosphate, magnesium sulphate, citrated caffeine, potassium bromide, lithium citrate, potassium citrate, and others, will produce satisfactory products. A typical formula would be as follows:

EFFERVESCENT SODIUM PHOSPHATE.

Sodium phosphate, uneffloresced crystals	500 grammes.
Sodium bicarbonate, dried and powdered	477 "
Tartaric acid, dried and powdered	252 "
Citric acid, uneffloresced crystals	162 "

Dry the sodium phosphate on a water-bath until it ceases to lose weight; after powdering the dried salt, mix it intimately with the citric acid and tartaric acid, then thoroughly incorporate the sodium bicarbonate.

The mixed powders are now ready for granulation. The change in manipulation which is suggested to replace that usually followed, requires either a gas stove or a blue-flame coal-oil stove, and one of the small tin or sheet-iron ovens which are so largely used with these stoves. The stove itself will be found in almost every drug store, and the oven costs but from \$1 to \$2.

The oven is heated to about 200° F. (the use of a thermometer is desirable at first, but one will quickly learn how to regulate the flame to produce the desired temperature), and the previously mixed powders are placed on, preferably, a glass plate, which has been heated with the oven, about $\frac{1}{2}$ pound being taken at a time, dependent upon the size of the oven. The door of the oven is now closed for about one minute, and, when opened, the whole mass will be found to be uniformly moist and ready to pass through a suitable sieve, the best kind and size being a tinned iron No. 6. This moist, granular powder may then be placed upon the top of the oven, where the heat is quite sufficient to thoroughly dry the granules, and the operator may proceed immediately with the next lot of mixed powder, easily granulating 10 or more pounds within an hour.

Sugar has often been proposed as an addition to these salts, but experience has shown that the slight improvement in taste, which is sometimes questioned, does not offset the likelihood of darkening, which is apt to occur when the salt is being heated, or the change in color after it has been made several months.

It should be remembered, too, that in making a granular effervescent salt by the method which depends upon the liberation of water of crystallization, a loss in weight, amounting to about 10 per cent., will be experienced. This is due, in part, to the loss of water which is driven off, and also to a trifling loss of carbon dioxide when the powder is moistened.

THE LEGISLATIVE YEAR.¹

BY HARRY B. MASON.

The legislative year of 1902-3 in pharmacy has been full of interest, and full of suggestion also. It has registered a distinct advance in the enactment of a number of laws of real importance and necessity, and as usual it has brought forth also a chaotic mass of impossible, vicious and foolish measures which would have been sad commentaries on our national intelligence had they not failed of passage. No fewer than ninety-eight bills were introduced in the various State and territorial legislatures; nineteen of these found a place upon the statute books; and it is extremely fortunate that on the whole this winnowing process selected the wheat from the chaff with sure intelligence.

Speaking first of the bills which became law, it is exceedingly gratifying, in view of the threatening spread of the cocaine evil, that the year has produced four cocaine acts—those of Georgia, Illinois, Pennsylvania and Texas. Three of these measures contain features which render them decided improvements over pre-existing cocaine legislation. The Georgia law is the customary one limiting the sale of cocaine to physicians' prescriptions, and prohibiting the refilling of these prescriptions. But all three of the other laws go further and stop up a leak which has practically nullified the cocaine acts of several of the Southern States: they prohibit physicians from giving prescriptions for the drug to habitues, provide quite heavy penalties for violations, and in one instance (the Illinois measure) declare that the offending person shall have his license as a physician revoked upon conviction of the second offense. Moreover, recognizing that catarrh snuffs and other preparations containing the drug are fertile causes of cocaine addiction, the Illinois act by implication, and the Pennsylvania act by specific statement, place the sale of these articles upon exactly the same basis as the alkaloid itself. The Texas measure unfortunately exempts proprietary preparations, and it differs from the other acts also in throwing its restrictions around the sale, not of cocaine alone, but as well of morphine and opium. Incidentally it may be remarked that the phraseology of the Texas enactment is unfortunately such that the

¹ Read at the fifty-first annual meeting of the American Pharmaceutical Association, held at Mackinac Island, Mich., August, 1903.

druggists of the State fear they will not be permitted to sell such common preparations as paregoric and Dover's powder save upon a physician's prescription, and in conformity with the provisions of the law.

Not less important than the cocaine measures are the new pharmacy laws enacted in the territories of Arizona and Hawaii. Wholly apart from its intrinsic merit, the Arizona law is of great importance and significance because it all but completes the scheme of State and territorial legislation in pharmacy which was begun thirty years ago. Every State in the Union proper now has a pharmacy law, and every territory with a single exception. Indian Territory alone has no law, although efforts to secure one were made this year as they had been made during previous years. With respect to the new Arizona measure, it may be described as differing little from the customary pharmacy law, and as being rather better, indeed, than would naturally be expected in a sparsely settled territory in the West. But it is to the Hawaiian Act that we must look for the greatest degree of satisfaction. Hawaii has taken the initiative in adopting the Beal Model Law, and as a result even the original thirteen States, with all their traditions and their civilization, are compelled to yield the palm to a far-off island that only yesterday became even a territory. The Hawaiian act, while in some respects departing from the Model Law, contains most of the restrictions to practice imposed by Professor Beal's admirable measure, even to the graduation requirement, and is on the whole superior to the law of any State or territory in the Union.

The year has brought a number of liquor enactments of unusual importance. New York, indeed, was the theatre of quite dramatic interest during the weeks in which the liquor question was being discussed in the legislative halls of her capital city. Efforts were made by the Excise Commissioner to have a law enacted which would have proved inimical to the interests of pharmacists; but representatives of the drug trade jumped to the defense with determination and intelligence, upheld their cause before legislative committees with rare vigor and success during several weeks, and finally secured the passage of a measure of their own parentage with which they are now expressing the liveliest satisfaction. This unique act provides that druggists who desire to trade in liquor other than on physicians' prescriptions may sell not more than a pint at a time,

and not to any one person oftener than once in twenty-four hours, upon the use in every instance of a special 10-cent stamp. The measure has been criticised in some quarters, but it would seem to have the advantage of nicely adapting the revenue expense of any druggist to the amount of business done by him, while it would remove from him that temptation to do a larger liquor business which is always present when the tax is so considerable as to constitute a financial burden.

New liquor laws are likewise to be reported from North Dakota, Vermont and New Hampshire. The North Dakota measure emanated from other than pharmaceutical circles, and provides that henceforth no liquor permit shall be issued to a druggist unless he secures a petition signed by 80 per cent. of the freeholders and 70 per cent. of the women in the town, ward or village in which he does business. Previously it was necessary to secure the signatures only of twenty-five freeholders and twenty-five women. Moreover, not more than half a pint of liquor may be sold to the same person within twenty-four hours; and it is provided that the customer must be known to the druggist, and must in every instance sign an affidavit. A second North Dakota law passed this year authorizes counties to pay rewards of \$50 for information leading to the arrest of persons violating the liquor statutes!

With respect to the new liquor measures of Vermont and New Hampshire, it may be explained that both these Commonwealths have now become other than prohibition States for the first time in nearly fifty years, and that general liquor laws have accordingly been enacted. In Vermont a druggist may now sell liquor "only upon a physician's prescription," and the prescription itself must specifically state the ailment for which the liquor is given, and must not be refilled. This restriction is not imposed by the New Hampshire act, but it is provided in that measure that all liquor sales shall be registered. In neither State may a druggist secure a license unless he is a registered pharmacist and in business "on his own account"—a provision intended to prevent saloon-keepers and others from doing a liquor business under the guise of druggists. In New Hampshire the annual tax is \$10. In Vermont it is "not less than \$10," and presumably as much more as the local authorities may happen to find themselves in urgent need of.

Other more or less important laws of the year may be briefly

considered. The druggists of California are quite pleased over the enactment of a measure in their State which imposes an annual tax of \$200 upon all itinerant venders of drugs—"kings of pain," "Quaker herb doctors," and others of this numerous and versatile class. In Nebraska a law was secured providing that henceforth pharmaceutical graduates shall not be exempted from examination by the Board of Pharmacy; New York State added one to the several laws throughout the country which prohibit the promiscuous distribution of medicine samples around on door-steps and in yards; in Utah a measure was passed that restores to pharmacists a class of business which the general storekeeper had attempted to usurp; in Arkansas the druggists secured amendments to the pharmacy law which provide for re-registration, and which also strengthen the enforcement features of the act; in Maine an amendment was gained placing the nomination of candidates for the Board of Pharmacy in the hands of the State Association; and in North Dakota the pharmacy law was so modified that persons who desire to become apprentices shall register as such, shall possess educational qualifications sufficient to gain entrance into a high school, and shall not be permitted to enter the examination for assistant pharmacists except after two years of service as registered apprentices.

Almost without exception, if not entirely so indeed, the foregoing list of the year's legislation spells progress. Perhaps the only act which proves the general rule by an exception is one which unfortunately gained a place upon the statute book of Virginia. This permits regularly licensed physicians in towns and rural districts of less than 1,500 inhabitants to register as pharmacists without examination. The druggists of Virginia deserve much sympathy. They are subject to assaults of a similar nature at nearly every session of the State legislature. In 1900 eight bills were made law which required the Board of Pharmacy to register specified individuals without compelling them to go through the needless and annoying formality of an examination. In 1901 an act was passed permitting all persons who had had three years of "experience" before the pharmacy law was first enacted in 1889 to become registered for the mere asking within a specified time. In 1902 an additional number of bills passed the legislature privileging certain persons to register without examination; but this time the Governor had the courage and the wisdom to say "Nay." And now, in 1903, when the civili-

zation of the world, and presumably of Virginia, has reached a dizzy height, we are treated to the spectacle of physicians being converted magically into pharmacists by fiat of law—an achievement which would have delighted the heart of any mysterious alchemist of the dark ages!

Turning now more briefly to the numerous measures which failed of success, it is worth while pausing at first to remark, what has already been intimated, that for the most part the bills which met their death were the very ones which richly deserved such a fate. Nearly all of them were either unjust, impossible, visionary or all these things together. There were a few exceptions, however, and these may receive a moment's consideration.

The pharmacy laws of Idaho and Texas are defective in providing, not for a single State Board of Pharmacy, but for county or district boards; and vain attempts in both States were made again this year, as they had been made before, to improve the situation. The Texas bill passed the legislature only to receive the Governor's veto. The pharmacists of Indian Territory, as has already been stated, failed again in their endeavor to secure the enactment of a pharmacy law and redeem their Commonwealth from the disgrace of being the only one now in the country without an act restricting the practice of pharmacy to competent persons; in Florida the druggists were unsuccessful in attempting to gain the passage of amendments strengthening the pharmacy act; in the prohibition State of Maine they failed in an effort to procure a law legalizing the sale of liquor in drug stores; in Alabama they likewise failed to secure an amendment preventing physicians from registering as pharmacists without examination; in California an attempt was unsuccessful to abolish re-registration and make the State support the Board of Pharmacy by annual appropriation; and in Pennsylvania a bill making graduation a requirement to practice fell by the wayside. Cocaine measures of varying merit failed of passage in the legislatures of Alabama, California, Minnesota, Nebraska, Missouri, Wyoming and West Virginia. "Shorter hours" bills, introduced in behalf of the clerks, met the same fate in California, Wisconsin, Minnesota and Washington, D. C.

Leaving these more or less commendable measures, most of which were introduced through the efforts of the pharmacists themselves, it may be observed that the year has been fertile in two types of

bills which, like the poor, are always and eternally with us—one providing that proprietary medicines shall bear their working formulas upon the label, the other permitting physicians to register as pharmacists without examination. Measures of the first type were introduced in six legislatures,¹ and in addition to these there were bills in different States prohibiting² the sale of "patents" which contain more than one per cent. of alcohol, directing³ that "patents" which contain any alcohol whatsoever shall state the percentage on the label, declaring⁴ that "patents" which contain more than five per cent. of alcohol shall be deemed alcoholic beverages and sold only by dealers who pay a retail liquor dealer's license, and prohibiting⁵ the manufacturers of "patents" from using portraits of persons in advertisements without their consent. Measures of the second type, permitting the registration of physicians, were considered by six legislatures,⁶ and other efforts to let down the bars were made also in five bills in as many States, which gave the privilege of registration without examination to graduates of pharmacy,⁷ to all pharmacists who had had five years' "experience" prior to the passage of the original pharmacy act⁸ (1882), to eighteen specified individuals,⁹ to all clerks of seven years' experience,¹⁰ and to every person who had been engaged in the business of dispensing pharmacy on his own account for five years."¹¹ The climax was reached in a Connecticut measure which generously and philanthropically suggested that the pharmacy act be suspended entirely for two years! The Virginia bill, already mentioned, was the only one of this numerous class which became law, and we should be devoutly thankful that no others ran the gamut successfully.

Numerous other measures inimical to the interests of pharmacists

¹ Massachusetts, Minnesota, Tennessee, Washington, Oregon and Pennsylvania.

² Massachusetts.

³ Minnesota.

⁴ Minnesota.

⁵ New York.

⁶ Arkansas, Michigan, Minnesota, Kansas, Wisconsin and Massachusetts.

⁷ Wisconsin.

⁸ Wisconsin.

⁹ Kansas.

¹⁰ Nebraska.

¹¹ Nebraska.

were introduced in various legislatures. Great concern was aroused in New York State over the Bostwick-Dowling measure, which would have rendered the druggist amenable to criminal prosecution if he dispensed in a prescription the preparation of one manufacturer when the preparation of another was indicated, and which was defeated only after the most determined and able opposition of the leading pharmacists of the State. Equal interest was felt in a Wisconsin measure which, introduced at the behest of a cutter, would have prohibited the operation of the tripartite plan in that State, and the death of which was accomplished only through the earnest efforts of representatives of the N. A. R. D. and the local associations.

A Massachusetts bill provided for the abolition of the Board of Pharmacy, while two other measures, one in Massachusetts and one in Missouri, made provision for the consolidation of the Boards of Pharmacy, Dentistry and Medicine. It was in Massachusetts also that effort was made, as it had frequently been made before, to take away from the Board of Pharmacy the salutary authority which it has over the issuance of liquor licenses to the pharmacists of the State. Poison-cork or poison-bottle bills, contrary to the usual condition of things, appeared in but three legislatures¹ this year. In four States² bills were introduced through the efforts of the saloon interests which in some instances would have compelled pharmacists to pay a tax nearly, if not quite, equal to that of saloon-keepers and which would have placed the druggist almost upon the saloon-keeper's level. A New York measure would have given general dealers the right to deal in pretty much everything, if only in packages bearing the label of a registered pharmacist. And in Massachusetts and New York bills were brought forward which, like those that failed in a number of States a year ago, would have rendered it illegal for the pharmacist to carbonate his own soda water on the premises.

A bird's-eye glance backward over the legislative year can scarcely fail to arouse feelings of gratification. Two pharmacy laws have been enacted in territories which previously had no measures at all; one of these, that placed upon the statute book of Hawaii, is

¹ New York, Minnesota and Tennessee.

² Michigan, Minnesota, Connecticut and Missouri.

an adaptation of the Beal Model Law and is perhaps superior to the pharmacy act of any State or territory; four cocaine bills, three of them uncommonly meritorious, have been passed; the druggists of New York State have secured the enactment of a liquor law with which they are greatly pleased; in the prohibition States of Vermont and New Hampshire the illegal and promiscuous sale of liquor has given way to its sale under restrictions which are at once wise and enforceable; provision has been made in North Dakota for the registration of apprentices and the establishment of a grammar school requirement; in California the unfair and unskilled competition of hawkers and venders of medicines has been lessened; in Utah that of grocers and general dealers has been largely eliminated; and in other States the pharmacy acts have been strengthened and improved in various ways. It is true that a number of additional measures of a meritorious nature failed of success in different States, but on the other hand death was meted out successfully to a host of bills which, if made law, would have done pharmacy incalculable harm. The year has altogether been a year of progress; the wheel has been turned forwards, not backwards; and this assurance should give us hope for the future.

REPORT OF COMMITTEE ON THE ACQUIREMENT OF DRUG HABITS.¹

BY E. G. EBERLE, CHAIRMAN, AND FREDERICK T. GORDON.

The committee on May 30th issued the following circular letter:

The above-named committee respectfully asks for your prompt co-operation. It is entirely unnecessary to impress you with the deep concern which you have with us in obtaining correct data relative to this abuse, so that ways and means for controlling it may be devised.

Last year a committee for the same purpose elicited valuable information through the unusually prompt responses from physicians and druggists in designated localities. We now hope to meet with the same favor from the hands of those we address, and ask you to fill in the blank spaces of the inclosed sheet and make such remarks as you may see proper in the premises on the reverse side.

¹ Read at the meeting of the American Pharmaceutical Association, August, 1903, and here presented in part.

Please obtain information bearing on the subject from physicians or other available sources, and if you have related items of interest to communicate they will be duly appreciated. If there are State laws or city ordinances in force in your locality, please furnish us with a copy, if possible, and comment on the success or means of evasion.

Your name will in no instance be used, and if you object to the committee knowing it you may omit your signature.

In either event please give the matter your serious attention, make your report as accurate and complete as possible, and mail it to the chairman of this committee.

Anticipating your favor, we beg to express our thanks for an early reply.

Accompanying the letter we inclosed a report blank, which is no doubt familiar to most of you, asking for data regarding the number of habitues known, the drug addicted to, sex, color, whether parents or not, the number of inmates in asylums, if pay patients or dependent upon charity, whether the number was increasing or decreasing, and also if habits were acquired from medicines and beverages of unknown composition on the market. Fifteen hundred of these report blanks and letters were sent out, every State and even Canada being favored. As a result we received about one hundred and fifty replies, about one hundred being made out on the blanks inclosed.

July 9th we sent out four hundred return postal cards to one or more persons in every State, asking them to send them to hospitals, asylums, etc., as is indicated by the following:

The above-named committee is endeavoring to obtain information relative to the extent of the habitual use of narcotics, the results, etc. We will not use your name nor that of the institution, the object being to obtain data. We assure you that the greatest care will be exercised in this particular, and your favor will be sincerely appreciated. Please fill out the attached return postal at your earliest convenience, as our association meets on the 3d day of August, and the return should be in the hands of the chairman not later than 23d inst.

On the return card we asked for the number of inmates, sex, color, whether parents or not, the drug used, the number discharged as cured, what per cent. were charity patients, was the number

increasing or decreasing, and how the habits were acquired. In response thereto we received thirty-four responses on the postal cards and quite a number of reports of various institutions.

The reports which we could use in the statistics of sales numbered only ninety-one and the figures can only be used for certain comparative deductions. It would be unreasonable to assume, because we have a greater number of habitues reported from Texas and a greater number of reports, that more of the drugs are used there than elsewhere because of the circumstance, and the same reasoning will apply with other figures; but of that more hereafter. We have received additional reports from States not in the list; but as the time is approaching when our report must be complete (July 27th), and for the further reason that they do not change any of the conclusions, we omit them. Before proceeding to a tabulation of the reports from asylums, etc., we wish to use some of the remarks made in conjunction with reports or in lieu thereof:

Alabama reports out of about 150 drug habitues, eight with heroin habit.

Canada reports an increasing use of drugs and mentions paregoric especially on account of being exempted in the law.

Connecticut reports a physician who has treated over 1,200 cases in twenty-eight years; fifty per cent. were addicted to morphine, thirty per cent. to opium and preparations and fifteen per cent. to cocaine. The cases were not confined to Connecticut.

Georgia report says: Almost every colored prostitute addicted to cocaine; another, a physician's prescription reading cocaine 25 cents' worth.

Indiana reports that a good many negroes and a few white women are addicted to cocaine.

Maryland reports the sale of cocaine by disreputable physicians, the purchase by a retailer of \$500 worth in six weeks; of a small dealer who purchases on an average twenty-five ounces cocaine per week.

Michigan reports increasing sale to negroes.

Minnesota reports a case using several large bottles of effervescing salts per week, a case using chloroform, ether, chloral, cocaine and morphine, trional users among the theatrical profession.

Ohio reports sales of jobbers to a few druggists only which aggregate 600 ounces cocaine per month.

Pennsylvania reports several heroin cases, another the purchase by a small retailer of 100,000 $\frac{1}{4}$ -grain morphine pills at a time. The sale of cocaine in drinks by saloon men is extensively followed.

Virginia reports enormous growth of cocaine habit among negroes.

General reports indicate that the sale of narcotics is not restricted to any section of the country, nor confined exclusively to the fallen and lower class. Information comes from several sources that in callings which demand many hours' work at a time or the hours of night, cocaine is resorted to for stimulation.

From other report cards we gather the following: Six stated that they did not treat drug habitues, therefore kept no record; one that they treated out-patients only and could give no accurate figures; an institute for feeble-minded women in New York had no habitues; a home for boys in New York had many youths addicted to tobacco, none to drugs; the latter was said of a report from a girls' home in Pennsylvania; another from Pennsylvania stated that they kept no information of this character, that if addicted they were forced to stop it here. There is little to be gathered from annual reports of insane asylums for the reason that no close record is kept of this, very frequently being only incidental to the cause; there are a great many cases referred to as "cause unknown," where possibly many cases not otherwise noted exist. In a report from Georgia we find eight cases of morphiomania, two in a report from Kentucky; Michigan reports eighteen from intemperance, narcotics included; Montana reports seven cases, all morphine, three using in addition cocaine and one smoking opium. One New York hospital reports five men and four women addicted to the drug habit out of 1,700 patients, and states that all the cases have used opium in some form and one man in addition cocaine. In addition to this a report from New York covering eight years, concerning 35,299 cases, there were 134 men and 128 women addicted to the drug habit. Pavilion for the Insane, Bellevue and allied hospitals for three months, in 587 cases, reports two females with toxic insanity due to morphine. Texas reports three cases in addition to those referred to in the schedule. Washington refers only to three cases and Wisconsin six. An institution devoted to the treatment reports on nearly 3,000 cases treated, covering a period of several years, the inmates being from twenty-two States, and also upon 100 morphine

users, who consumed all the way from one grain to three-eighths ounce per day. The endorsements of this institution are good and they claim relapses of only twenty-five per cent.

We have quite a number of letters from various institutions of this character and some of their reports are interesting, but not suitable for this report any further than to state that in almost every city of say 100,000 inhabitants there are places of this kind, indicating the extent to which the evil exists, even among those who are willing to be cured, if possible. The fees charged by these homes vary from \$30 to \$200, and from home to a hospital treatment.

From city jails we have quite a number of incomplete returns, all of them indicating that the dockets are daily interspersed with charges against offending drug fiends. A most interesting report furnished me by the chairman of last year's committee and from Dr. Geo. L. Wilkins, of the Baltimore city jail, is so comprehensive that it is worthy of a place in these records; but to economize space I will endeavor to condense the report and hope not to destroy its value. The period involved is only brief and relates to forty-seven individuals, all women with the exception of four, and nearly all colored. The oldest female was forty-five years, the youngest twenty-one, the average age twenty-four; the oldest male sixty years, youngest twenty-eight. Ten of the above were married. In six cases the drug was prescribed by physicians, in five cases crime was committed to obtain the drug. Nine used morphine, seventeen cocaine, sixteen used both, two laudanum, two morphine and laudanum, and the others all. Two used all methods applied in its use; in the other instances, morphine was taken by mouth and cocaine in nose.

The doctor states that they invariably stop the use of the drugs without any particular ill effects. For fear that the assertion may be omitted where it possibly more properly belongs, we make it here, namely, that those who think they cannot break themselves of the habit are those who are free to obtain the drug by purchase or otherwise.

Acquirement of the drug habit is a subject that we must carefully look into if we would take steps to stop it.

The United States Government permits the importation of smoking opium for no better reason than the vender has for selling it and excuses himself by saying, if I don't my neighbor will—the public has not been benefited, I have allowed my competitor to take my profit.

Some patent-medicine manufacturers want to impress the consumer with the immediate relief idea; nothing like cocaine for one who suffers with catarrh, nothing like an opiate for a pain, nothing like a stimulant to revive the patient who has become despondent over his supposed ailment. They have found the way to health and tell their friends about it, who help them spread the news, and soon we have a testimonial and a picture in our great dailies. If these combinations are good, and in reality only one of the ingredients does this wonderful work, why not take it by itself. We have now created an habitue in embryo.

A physician is called for the first time to a well-to-do home; a practice might be secured which would be valuable if he can only show his ability, and he does—there is not very much pain in the prick of a needle, and the result is so quick, so calming—wonderful man—the patient begins to improve at once.

Society's whirl demands late hours; a little punch, perhaps salad; sleep must be immediate or the man of business will not get any; there are medicines that will produce it quickly; the prescription can be refilled as occasion demands. The next day a severe headache occurs—no trouble to relieve that, so convenient that many carry it in their pocket, because the headache comes so frequently.

The man of business must develop the idea which is to yield an extra profit quickly, gain the advantage over his competitor; this may make him nervous, but what of it? That can be remedied by the physician; perhaps he saw an advertisement of a remedy in the paper that would do it, or a friend told him what he is using for the same trouble.

The pain, irritation, itching, inflammations and other annoyances yield to the influence of some of these delusive drugs; an ointment, a spray, a suppository, all have had their victims.

A medicine is perfectly harmless (?) because it is taken at the soda fountain; it is easily taken; it makes one feel so bright.

The lawyer must have his brain yield its utmost; the preacher must make his sermons interesting; constant strain evidences itself and this must be corrected at once and it can be, and once more they exhibit even greater fluency than before.

Shall we carry this idea forward to the generation which follows? It is needless; the nursing babe absorbs medicine from its mother's breast as it draws its nourishment; it becomes an habitue with its

birth. My mother takes this, I will try a little of it, is another trend of the habit, as well as other association in various walks of life. The negroes, the lower and immoral classes, are naturally most readily influenced, and therefore among them we have the greater number, for they give little thought to the seriousness of the habit forming.

I have before me a report from New Jersey; a mother purchased morphine pills several times a week, her son acquired the same habit; another mother takes laudanum, now her daughter does the same. Nearly all report headache remedy habitues; one says if that is a habit, I have about one hundred; I sell about eight gross per year. A Dover's powder habitue was new to me, but knowing the reporter personally, entertain no doubt whatever. Diarrhœa remedies are reported in habitual use by quite a number; one reports a whole family, including young children, addicted. They quickly become morphine and laudanum users. Quite a number report addiction due to physicians in being too ready with the hypodermic injections and suggesting to the patient to send for a few morphine pills. We have many reports expressed in the following, which we copy verbatim from an Indiana letter: "The most deplorable condition pertaining to the drug habit of late years is that many of the leading lights in the medical profession should become slaves to a vice which they are supposed to combat." Another writes that quite a number of habitues of his locality lay their acquisition to two physicians who were habitues themselves. This result is natural, but deplorable. The other addictions are ascribed to the use of patent medicines, already described and exhibited in about thirty-eight letters and reports.

I have not devoted any space to the lower walks of life and will quote two in part. One from Montana reads: "Most drug fiends of this section come from the Pacific coast. They commence with smoking opium, which becomes too expensive and consumes too much time, so they eat morphine; then they use it by injection because it goes further, then they tip their injection off with cocaine because it deadens the pain, and gradually they use more cocaine than morphine." The other report carries with it the same idea relative to morphine and cocaine, and says further that cocaine fiends are vicious, but that the habit is not as chaining as morphine.

Reviewing now the reports received, we cannot say they are as

satisfactory as we had reason to expect. We did not expect very satisfactory returns, having had experience heretofore, and for this reason more than any other sent the blanks to all portions of the country, so that if we received any it might at least be shown that the habit was confined to no particular portion of it. This we believe has been clearly evidenced. We believe also that the proportionate use of the different drugs is fairly authentic. The number of habitues reported in asylums, prisons, etc., is not of any special value, because no accurate record is kept, and we believe that States should exact it. This is a matter of very large expense, of grave importance to the public, and their interests should be protected. The deductions evidence an equal addiction regardless of climatic influence, and if we have pointed out the necessity of record in public institutions of habitues and the suggestion is accepted and heeded, we will even consider this effort not to have been in vain.

We are confident that the use of narcotics is increasing and that evil effects from it will come to succeeding generations. While the increase is most evident with the lower classes, the statistics of institutes devoted to the cure of habitues show that their patients are principally drawn from those in the higher walks of life. Occasionally we have received letters which were a relief indeed and we quote one: "This old Dutch bailiwick seems to be made up of a sober, industrious, God-fearing, law-abiding, democratic-voting people, given to no bad habits."

Statistics are difficult to obtain, and we suggest, if it ever again seems expedient to obtain them, that one person in a locality be asked to secure the information, give him plenty of time so that he can gather it through conversation and observation and then report fully, not for himself, but for the community of which he is a component part. It is to be observed that if we had obtained numerous statistics from any one locality, many habitues would have been duplicated, but with this condition we were not burdened. We have a report on a physician who has used 10 grains of trional and 10 grains of sulfonal every day for several years without increasing the dose and no apparent ill effect; this seems remarkable to us.

Statistics of imports of opium, morphine, cocaine and chloral during the fiscal years 1901, 1902 and 1903 (nine months):

COCAINE SALTS.

1901	\$176,948.
1902	254,704.
1903	199,826.

NOTE.—The imports of cocaine salts are given only in the shape of the value of the quantity entered at the Custom Houses.

There is an increase of \$77,756 in the value of cocaine imported in 1902 over that for 1901, of \$67,115 for the equivalent of the nine months of 1903 reported. Averaging \$3 an ounce as the value of the cocaine, this gives us an increased importation of 25,920 ounces in 1902 and 22,372 ounces for nine months of 1903—a fact that speaks volumes in itself.

CRUDE OPIUM.

1901	491,448 pounds.
1902	548,673 "
1903	338,937 "

An increase of 57,225 pounds in 1902 over 1901; 1903 data incomplete. The values were \$660,627 for the portion of 1903 reported.

SMOKING OPIUM.

1901	139,519 pounds.
1902	163,441 "
1903	140,964 "

There was an increase of 34,511 pounds in the amount of smoking opium imported for the portion of 1903 reported, this drug seeming to be steadily increasing in amount consumed here. The value of the smoking opium imported for nine months of 1903 was \$871,7161

MORPHINE SALTS.

1901	50,698 ounces.
1902	38,002 "
1903	119,697 "

CHLORAL.

1901	4,485 pounds.
1902	26,977 "
1903	Not yet reported.

We are unfortunate in not having a report on the importation of coca.

Legislation is the important factor to control the increasing vice, and from the tone of all letters, even those who do a large business in this line, there is at least a general conviction that it must be

done. We will quote from a few: "The importation of smoking opium should be stopped." "Absolute withdrawal of the repeatedly offending druggists' license is the only remedy." "Prevent the sale of the narcotics except by licensed pharmacist on a physician's prescription, which should be registered and kept for inspection." "Let us restrict the sale of the narcotics first and afterward the patent and proprietary medicines containing them." "Let the physician be prosecuted as well as the druggist, if aiding the habit." Denver reports: "In this city we have a very stringent city ordinance in addition to the State law prohibiting the sale of opium and cocaine, and it is made an offense by the city ordinance to sell either of the above drugs without the authority of a prescription from a reputable physician. This ordinance has been followed up by detective work by the Wayside Mission—which, by the way, is a charitable institution of this city for caring for the victims of this habit—and it has become, if not impossible, quite difficult for victims of the above drugs to obtain supplies. They are, of course, obtainable, regardless of the law, but under such police surveillance as to bring the sale down to minimum."

No doubt Prof. J. H. Beal, to whom the model cocaine law has been referred, will call attention to restrictions in the various States, and to refer to these here would simply mean repetition. The chairman believes that stringent State legislation providing fine and imprisonment with surrender of license to practise medicine and pharmacy is the best means to control this vice. Legislation has a tendency to induce secret sale by individuals, therefore various kinds of punishment are necessary. It does not seem practical for the Government to assume supervision of the sale other than perhaps by legislation, if the States fail in the necessary control. If handled like the cigar tax, it would avail little; if like spirits, the plan would be exceedingly cumbersome and expensive, if not impractical, not only for the Government, but also for the druggists, and the business details of the latter are such that even now a large gross profit nets only insignificant returns. You are no doubt aware that in the larger cities, and possibly in the smaller, cocaine is served on request in drinks, and indications are that in places of this character all these drugs are supplied. The concluding remarks which the chairman would make are interwoven in some of those made by his colleague and are the result of his careful study and investigation. They follow:

OPIUM AND MORPHINE USE.

Careful study of data personally collected and from reliable sources forces the conclusion that the habitual use of opium in its various forms is increasing and that this increase is confined to no one class or occupation. A majority of the class known as "habitual criminals" and those men and women whose offenses against law and morality bring them often into the police courts, seem to be drug habitues, according to the testimony of police authorities and hospital surgeons. The fact that most of these people have become users of drugs *after* they had joined the ranks of the "under world" does not lessen the danger to society of the situation. The testimony is almost unanimous that a criminal or a member of the class that preys on society who is a "drug fiend" is the hardest to reform, more often slips back into a criminal life, and even after a period of respectability will commit crime to obtain money to purchase the favorite drug if out of work and unable to procure it. The use of narcotics also blunts their moral sense, so that few even desire to reform, being satisfied with any kind of life that permits them to get and enjoy their drug. So serious is this feature of the question of drug abuse that the writer earnestly urges that legislation be secured to entirely prohibit the sale of narcotic drugs to certain classes of people, such as the demi-monde, known criminals or those whose occupation is "shady." Of course it is hard to decide what a man is by looking at him, but druggists in certain localities in large cities certainly learn to know the class of their customers.

The weight of evidence seems to be that an habitual drug user is more apt to succumb to temptation than a non-user; their moral sense is blunted and an exaggerated sense of selfishness and personal gratification causes them to place their desires or seeming welfare above all else.

While it has not been practicable to obtain exact figures, it can be stated that the drug habit is alarmingly increasing among the men of our army and navy. The number of men using opium in the army has greatly increased since the occupation of the Philippines, many "opium smokers" acquiring the habit there from Chinese or natives. The smoking of opium by the men of the navy does not seem to be as prevalent as in the army, gum opium "pills" or morphine being the way in which the drug is mostly used by sailors. Quite a number of enlisted men have been discharged from both

army and navy during the last year because of their being detected as habitual users of opium or morphine—probably several hundred per cent. more during the last five years than for any ten years previous. To the best of the writer's knowledge—and he has carefully inquired into the facts—practically all the cases of drug habitues in both army and navy arise from the men learning the habit from natives of foreign countries or from lewd women and men in this country. Not a single case of drug habit coming from the prescribing of an opiate by a medical officer can be recalled, opium and allied drugs being very guardedly and carefully used by army and navy medical officers. A goodly percentage of the cases are men who have acquired some drug habit prior to enlistment, while a few—sad to say—are from the men of the hospital corps who drifted into the habit from constant opportunity and handling of the baneful drug.

At present, it is calculated that there are over a *million* opium smokers in the United States, the importation of opium for smoking purposes being double that for medicinal uses, amounting to more than 500,000 pounds last year, valued at \$3,500,000!

COCAINE HABIT.

The frightful effects of cocaine on users of this very "devil-drug" have been so often and graphically told that it is hardly necessary to retell the story. One peculiar feature of the cocaine habit noted by the writer is that one of the first signs of the use in a person is that the habitue loses all care for personal appearance or neatness, and a man formerly the pink of neatness soon becomes noticeably slovenly in dress and appearance. There does not seem to be anything yet discovered that has as baneful an effect on the user as does cocaine. The writer has seen this drug literally turn a bright, high-principled man into a sneak-thief and liar, absolutely without regard for morality or principle. One redeeming feature there is: the habitual use of cocaine seems to lessen both sexual desire and ability, so there is less danger of its transmission by heredity.

The evidence seems to point to the startling fact that nine-tenths of the cocaine habitues have fallen victims to its influence through use of prescriptions or patent medicines containing the drug. Those who deliberately begin the use of cocaine mostly seem to do

so through example of teaching of others or from having read accounts of the wonderful stimulating properties cocaine has on the mind and the body. The use of cocaine seems to be rapidly supplanting in part the use of morphine among men and women of the "under world," and the writer knows personally of two cases of men who acquired the cocaine habit from lewd women they visited habitually. A very common form in which cocaine is used by this class is that of a "snuff," the cocaine being finely powdered and diluted with some inert powder, this being a conveniently portable and easily used form. A powder containing fully 50 per cent. of cocaine is sold in large quantities to a certain class of men and women—the "powers that prey"—under the name of "Bright-eye," from the effect of the drug in giving the eyes a temporary brilliancy.

Most of the cocaine used by these people they buy undisguisedly as such, there being plenty of drug stores where they can buy cocaine, morphine, etc., as easily as epsom salts. The writer knows of one drug store in Philadelphia where regular customers can enter and get cocaine without any formality but the payment of its price. Holding up one finger means the party wants a "five-cent powder;" two fingers, ten cents' worth; three, fifteen cents, and so on, the mere holding up of the fingers in the initiated way being enough! This druggist buys cocaine in 100-ounce lots—from a supposedly reputable (?) manufacturer! Personally, the writer is sorry to be forced to admit that the majority of drug stores will fill a prescription calling for cocaine, even in unusual amounts, with little remark save saying "the price of this will be a little high." In one large Eastern city, out of about twenty-five stores visited, only in four was there any question as to having a prescription calling for fifteen and twenty grains of cocaine "to be used as directed, in eyes," etc., put up and handed him. Not even a word of caution as to the nature of the drug was vouchsafed. This is not an accusation or a sensational assertion, it is simply the statement of actual experience.

It has seemed to the writer, after a little delving into the facts of the supply of drugs to habitues, that the retail druggist is far less to blame than the manufacturer or wholesale dealer. While many druggists are careless in selling drugs and save their conscience when selling to a "fiend" by saying, "if I don't, some one else will,"

very few retailers actually make a practice of supplying drug habitues or bidding for their trade. On the other hand, when a manufacturer or jobber supplies a small retail drug store with pounds of morphine and cocaine every month, can it be said they do not know the reason for such unusual orders? One store in Philadelphia, a store doing little prescription and no hospital business, buys cocaine in 100-ounce lots, almost monthly. What must be the moral principle of the wholesaler who supplies such a drug store with such a self-advertising criminal purchase? Before we punish the little fellows we should begin higher up and put behind the bars the criminals who make it possible for the little fellows to carry on their nefarious trade. They can only plead ignorance by acknowledging themselves unfit to deal in such articles, but their real excuse is that they "want the money."

If it is possible to enact laws to prevent the retail sale of narcotic drugs except under certain conditions, it certainly seems feasible to enact a law that will prevent persons in the guise of retail druggists obtaining cocaine, morphine, etc., in quantities utterly beyond reasonable needs of their business. It might chafe some to be compelled to show how much of a certain article they used in their legitimate business, but it is already done by the National Government in one form in the manufacture and sale of alcohol and tobacco, and any one who has at all studied the question of drug abuse realizes that alcohol is fast becoming a far feeblower power of evil than narcotic drugs. The writer may be emphatic, but he has seen enough of the evils coming from the abuse of drugs to make him fear that unless very stern and speedy action is taken *now*, the people of the United States will pay dearly for their neglect in the no distant future. And he has little faith in an appeal to the moral sense of the men who are to-day supplying the retail drug stores with all the drugs they can sell, nor of the class of druggists who supply the "dope fiends." There is but one appeal to such men, and that is through fear—fear of their pocket-books or fear of jail—and the only way to stop them from continuing their practice is to make the penalty severe enough to be adequate to the danger of their crime and then administer it unsparingly. A murderer who destroys a man's body is an angel beside one who destroys that man's soul and lets the body live for crime.

And there is another feature demanding our attention—that is,

the recognition by the law of the fact that many drug fiends delight in teaching others the use of their favorite drug, and the enactment of some legal means for checking this danger by adequate punishment of the guilty. The writer has learned of too many cases where persons have learned a use of the drug from an habitue, and he believes that this factor in the increase of drug abuse has not been properly considered. It is certainly worthy of careful study and prompt action to prevent its effects from becoming still more alarming.

It may seem pessimistic, but the facts certainly seem to bear out the assertion that the only remedy for the present widespread increase in the use of narcotic drugs is in the enactment of stringent laws to throw as many difficulties as possible around the obtaining of such drugs for *any* purpose, the provision of exceedingly severe penalties for the sale of narcotic drugs for any purposes but medicinal, and for any advice, practice or teaching that will cause non-users to become habitues and *rigid enforcement of every penalty to its full extent*. When one considers the number of ruined lives and homes caused by our loose laws and practices, the price of a little inconvenience or annoyance in the obtaining of some drug for lawful purposes seems a very small one to pay.

DRAFT OF A PROPOSED ANTI-NARCOTIC LAW.

BY J. H. BEAL.

The following is the draft of a law to provide against the evils resulting from the traffic in certain narcotic drugs, which was presented by J. H. Beal to the Section on Education and Legislation of the American Pharmaceutical Association, August, 1903:

SECTION I. That it shall be unlawful for any person, firm or corporation to sell, furnish or give away any cocaine, salts of cocaine, or preparations of any cocaine or salts of cocaine, or any morphine, salts of morphine, or preparations containing any morphine or salts of morphine, or any opium or preparations containing opium, or any chloral hydrate or preparations containing chloral hydrate, except upon the original written order or prescription of a lawfully authorized practitioner of medicine, dentistry or veterinary medicine, which order or prescription shall be dated and shall contain the name of the person for whom prescribed, or if ordered by a practitioner of veterinary medicine, shall state the kind of animal for which ordered, and shall be signed by the person giving the prescription or order. Such written order or prescription shall be permanently retained on file by the person, firm or corporation who

shall compound or dispense the articles ordered or prescribed, and it shall not be recompounded or dispensed a second time, except upon the written order of the original prescriber.

Provided, however, that the above provisions shall not apply to preparations containing not more than 2 grains of opium, or not more than $\frac{1}{2}$ grain of morphine, or not more than 2 grains of chloral hydrate, or more than $\frac{1}{4}$ grain of cocaine in 1 fluidounce or if a solid preparation in 1 avoirdupois ounce. Provided also that the above provisions shall not apply to preparations recommended in good faith for diarrhoea and cholera, each bottle or package of which is accompanied by specific directions for use, or a caution against habitual use, nor to liniments or ointments when plainly labelled "for external use only;" and provided further, that the above provisions shall not apply to sales at wholesale by jobbers, wholesalers and manufacturers to retail druggists, nor to sales at retail by retail druggists to regular practitioners of medicine, dentistry or veterinary medicines, nor to sales made to manufacturers of proprietary or pharmaceutical preparations for use in the manufacture of such preparations, or to sales to hospitals, colleges, scientific and public institutions.

SEC. 2. It shall be unlawful for any practitioner of medicine, dentistry or veterinary medicine, to furnish to or to prescribe for the use of any habitual user of the same, any cocaine or morphine, or any salt or compound of cocaine or morphine, or any preparation containing cocaine or morphine or their salts, or any opium or chloral hydrate or any preparation containing opium or chloral hydrate. And it shall also be unlawful for any practitioner of dentistry to prescribe any of the foregoing substances for any person not under his treatment in the regular line of his profession, or for any practitioner of veterinary medicine to prescribe any of the foregoing substances for the use of any human being. Provided, however, that the provisions of this section shall not be construed to prevent any lawfully authorized practitioner of medicine from prescribing in good faith for the use of any habitual user of narcotic drugs such substances as he may deem necessary for the treatment of such habit.

SEC. 3. Any person who shall knowingly violate any of the provisions of this Act shall be deemed guilty of a misdemeanor, and upon conviction for the first offense, shall be fined not less than \$25 nor more than \$50, and upon conviction for the second offense shall be fined not less than \$50 nor more than \$100, and upon conviction for the third and all subsequent offenses, shall be fined not less than \$100 nor more than \$200, and shall be confined in the county jail for not more than six months. It shall be the duty of the Grand Jury to make presentments for violations of this Act.

THE DRUG MARKET FOR 1902-1903.

The following is a portion of a report presented by the Committee on Drug Market of the American Pharmaceutical Association, at the meeting in August, 1903, and read by E. H. Gane:

Acid hydrochloric, C. P.: Three carboys. All gave zinc, apparently from zinc cap of carelessly closed carboys.

Acid hypophosphorous, 50 per cent.: Under strength; contained excess of metallic impurities and calcium sulphate.

Alum, dried: Eight samples proved to be made from ammonia alum; none found made from U. S. P. potassium alum.

Ammonium chloride, pure: Not all volatilized; gave pp. with ammonium sulphide and potassium ferrocyanide; contained aluminum salt.

Arrowroot: Substituted entirely by corn starch.

Arrowroot (American): Seventy-five per cent. corn starch.

Beeswax: (1) Abnormal in all respects; sp. gr., 0.9418; melting point, 61° C.; acid number, 11.06; ether number, 54.44; contained 30 per cent. paraffin. (2) A mixture of beeswax and Chinese wax. (3) Adulterated with 33 per cent. of Cassava starch; freed from the starch the residual wax tested as pure.

Cannabis indica: (1) 19 per cent. below standard. (2) 24 per cent. below standard.

Cantharides, Russian: Low in cantharidin; powdered: 0.38, 0.36; is often 0.8.

Carbon disulphide, C. P.: Contained 0.3 per cent. dissolved sulphur, colored lead acetate solution and had fetid odor.

Chloroform, pure, for anæsthesia: Rarely stands the barium hydrate test, and from careless storage or handling is not fit for anæsthetic purposes; three samples contained decomposition products—COCl₂ and HCl.

Coca leaf: Contained 18 per cent. twigs, stems, seed capsules, foreign leaves, etc.

Cochineal: Contained 30.81 per cent. ash, instead of 6 per cent.; the impurity was talcum.

Cochineal, powdered: Contained 17.25 per cent. ash, largely earthy matter.

Colocynth, Trieste: Contained 50 per cent. loose seed, in addition to those in the fruit; five cases gave 45 per cent. pulp

Colocynth, Spanish: Contained 75 per cent. loose seed; hard to obtain with less than 40 per cent. loose seed; five cases gave 20 per cent. pulp.

Copaiba: Mixed with fatty oil and of pungent, rancid odor.

Cottonroot bark: Nearly half of bale rootlets and not bark.

Creosote, beechwood: Contained but a trace of the fraction, boiling around 205° C. to 210° C., showing removal of guaiacol.

Cubeb berries: Contained 25 per cent. of twigs, stems, worthless berries, etc.; yielded 6 per cent. oil. The admixture of genuine but worthless material far from uncommon.

Diastase of malt (1): One part converted 30 of starch. (2): One part converted 100 of starch.

Eucalyptol: Sp. gr., 0.9272; optical rotation $+1^{\circ}30'$. Should be inactive; boiling point 174° to 175° C.; seldom meet with a sample complying strictly with U. S. P. requirements.

Gamboge, powdered: Contained a notable amount of starch, apparently rice flour.

Golden seal: Contained 23.8 per cent. ash and 2.02 per cent. hydrastine alkaloid. The admixture of foreign matter, either by accident or design, is far too prevalent.

Horse Medley: Supposed to be crude antimony sulphide; contained 99 per cent. wood charcoal.

Jaborandi leaf: Contained 16.7 per cent. of sticks, stems and other foreign matter.

Jaborandi, fluid extract: Contained 0.32 per cent. alkaloid; standard, 0.75 per cent.

Linseed meal: Carload lot; oil had been removed; only 18 per cent. remained.

Lithium carbonate: Contained 98.25 per cent. lithium carbonate and slight excess of sulphate. (U. S. P. requirement, 99 per cent. lithium carbonate.)

Lycopodium: Two lots contained small percentage of starch. Gave 2 per cent. ash, which is below the U. S. P. limit of 5 per cent.

Mace: Adulterated with Malabar mace, ingeniously colored to resemble the genuine. Microscopical sections differ little from the genuine product.

Mercurial ointment: Did not contain any mercury.

Oil, almond, French: Supposed to be expressed from peach kernels. Consists wholly or in part of peanut oil.

Oil, bay: Sp. gr. too low; 0.9427. Should be 0.965 to 0.975.

Oil, caraway: Prepared by admixture of carvene and carvol in varying proportions.

Oil, cedar: Abnormal in all points; sp. gr., 0.8857; optical rotation, $-1^{\circ}55'$. Insoluble in ten volumes of 80 per cent. alcohol. The quality of oil cedar seems to be abnormally bad.

Oil, citronella: (1) Adulterated with resin spirit; (2) adulterated with kerosene—very common.

Oil, codliver: (1) Mixed with seal oil; (2) mixed with coast or shore oil, or substituted by it.

Oil, hemlock No. 1: Sp. gr., 0.8757; optical rotation, $+2^{\circ}40'$. Should be, Sp. gr., 0.907 to 0.913, and optical rotation -20° to 24° .

Oil, hemlock, No. 2: Sp. gr., 0.9001; optical rotation, $-9^{\circ}36'$. Contained 13 per cent. of bornyl acetate.

Oil, lavender, No. 1: Contained salicylic acid.

Oil, lavender, No. 2: Contained oil of turpentine.

Oil, lemongrass: Mixed with acetone.

Oil, lime, expressed: Rank odor. Optical rotation, $11^{\circ}48'$. Should be 35° to 38° . Solubility normal. Corresponds to a distilled oil.

Olive oil (1): Substituted by paraffin oil; (2) a large portion of the cheaper grades is adulterated. Admixtures with cottonseed oil are less frequent, but the use of peanut oil is very common.

Oil, peppermint: Mixed with acetin (*C. & D.*, April 11, 1903, 501). The addition of acetin raises the apparent content of ester.

Oil, rue, No. 1: Abnormal in every point. Sp. gr., 0.855; optical rotation, -30.72 . Insoluble in 70 per cent. alcohol. Does not congeal at -10° C. 80 per cent. distills 160° to 200° C. Adulterant, French oil turpentine.

Oil, rue, No. 2: Abnormal in every point. Optical rotation, -27.68 . 85 per cent. distilled between 160° and 200° C. Adulterant, French oil turpentine.

Oil, sandalwood (1): Mixed with cedar oil; (2) adulterated with chloroform, raising the sp. gr. and increasing the apparent content of alcohol.

Oil, sassafras, No. 1: Sp. gr., 1.024. Should be 1.07 to 1.09. Contained oil of camphor.

Oil, sassafras, No. 2: Sp. gr., 1.048. Contained oil of camphor.

Oil, turpentine, rectified: Sp. gr., 0.8600. Gave 2 per cent. of resin. Should be free from resin.

Pepper, black: One sample contained 70 per cent. ground rice, and another $18\frac{1}{2}$ per cent. inorganic matter.

Petroleum ether, boiling point 60° to 65° C.: Not obtainable. The commercial article boils anywhere from 30° to 120° C., owing to the cracking of the hydrocarbons during distillation.

Phenacetin: Claim made that 315 samples consisted largely of acetanilid. (N. Y. Board of Health. *Drug. Circular*, February, 1901.)

Podophyllin: Commercial grades rarely range over 85 per cent. soluble in alcohol. Apparently little effort is made to remove all extractive matter. Some samples are apparently powdered alcoholic extracts. Picropodophyllin content (Gordin's method), No. 1, 17 per cent.; No. 2, 14.4 per cent. Standard, 22 per cent.

Potassium bromide, No. 1: Contained notable amount of bromate.

Potassium bromide, No. 2: American brands contain 1 per cent. to 9 per cent. chlorides, rarely less than 3 per cent. German brands are better, usually containing 1 per cent. to 2 per cent.

Potassium bisulphate, C. P. No. 1: Contained 88.78 per cent. potassium bisulphate; remainder sulphate and moisture.

Potassium bisulphate, C. P., No. 2: Contained 33 per cent. potassium bisulphate; remainder sulphate, moisture and a trace of chloride.

Potassium citrate: (1) Contained 2.1 per cent. free acid, as citric and excess of chloride—off color—acid to litmus paper; (2) 1.05 per cent. free acid and excess of chloride; (3) 1.40 per cent. free acid and 0.6 per cent. chloride.

Potassium, iodide, C. P.: Contained sulphate, chloride, iodate and sodium: 5 gm. required 3 c. c. N/10 acid to neutralize the alkalinity. Not even suitable for medicinal use.

Pulsatilla herb: One-third true plant; two-thirds grass and other plants.

Scammony resin: Mixed with resin of orizaba jalap (*Ipomoea orizabensis*.)

Soda, caustic, pure by alcohol: Contained an objectionable amount of chloride.

Sodium sulphite, C. P., crystals: Contained 80 per cent. sulphite, 8.36 per cent. sulphate.

Sodium sulphite, anhydrous: Contained 63 per cent. anhydrous sulphite.

Sodium sulphite, C. P., anhydrous: Contained 82 per cent. anhydrous sulphite.

Sodium sulphite, purified: Contained 87 per cent. sulphite, 5.8 per cent. sulphate.

Spirit of camphor: 40 out of 215 samples made with wood alcohol. (*American Druggist*, March 9, 1903.)

Sulphur, sublimed: Some samples very acid. As high as 0.6 per cent. free H_2SO_4 found.

BRITISH PHARMACEUTICAL CONFERENCE.

The fortieth annual meeting of the British Pharmaceutical Conference was held in Bristol, England, July 27 to 30, 1903.

From the very complete and exhaustive reports of the proceedings, published in the British pharmaceutical journals within a few days after the last session, the following abstracts have been made:

The proceedings were inaugurated on Monday evening, July 27th, by a reception at the Royal Hotel, held by the Lord Mayor of Bristol, Sir Robert H. Simes.

The first session of the Conference was convened on Tuesday morning in the lecture hall of University College, the President, Mr. T. H. W. Idris, presiding.

The Conference was welcomed to Bristol by Prof. C. Lloyd Morgan, Principal of University College. The address of welcome was replied to by the President of the Conference and also by Mr. S. R. Atkins, President of the Pharmaceutical Society, who, in the course of his remarks, in speaking of the educational work of the provincial universities, said that the society of which he had the honor to be President was entirely in sympathy with that work, and desired more and more to associate itself with the work of the universities. He further stated that he felt that the pharmacists of the future would receive their training in the universities and would become highly trained and highly cultured.

The address of the President, Mr. T. H. W. Idris, was devoted to several interesting and timely topics. After some introductory remarks on the possibilities of the calling as a pharmacist, particularly when, as in several cases cited by him, the pharmacist took a pleasure in his own business and achieved success, the President dwelt at some length on two subjects more closely connected with his own avocation. The first of these was on:

Essential Oils.—In this connection the President called attention to the danger of considering these bodies as definite chemical compounds, and mentioned a number of cases where the same oils, obtained under varying conditions, were markedly different in their physical properties. The fact that any one of the constituents can be readily determined should not be seized on as a method for estimating the value of an oil, the exceptions, of course, being oils in which this constituent is at the same time the active portion. The President

laid particular stress on the necessity of continued research before drawing hard-and-fast conclusions. After referring at some length to the recent progress that had been made in the knowledge of the chemistry of essential oils, he referred to the fact that the adulteration of these compounds had kept fully in line with, if not a little ahead of, chemical research.

Aerated Waters were next referred to, particular stress being laid on the advantage of aerating waters at low temperatures. At 4° C. the necessary carbon dioxide is absorbed so readily that a pressure of two atmospheres is found to be quite sufficient, the breakage in the bottling machines is greatly reduced, and the danger to the operator is materially lessened.

Dispensing by Physicians was then discussed, the President presenting a number of arguments in favor of State interference in the practice of medical men dispensing their own medicines. After citing a number of cases of known fatal errors, and suggesting the possibility that a much greater number of these errors are not known, the President summed up the situation in the following general statements:

- (1) Few doctors are competent, by proper training, to dispense.
- (2) Even if they were rendered more fit, by education, to discharge that function, the very nature of their other duties militates against that concentration of thought which the experience of the pharmacist teaches is so essential in the practice of pharmacy.
- (3) The separation of prescribing from dispensing necessarily insures much greater care and thought, by both the prescriber and dispenser; and, further, in each case, one is a check on the other.
- (4) It would be more satisfactory from a public point of view were doctors freed from the possibility of having mistakes to cover or answer for.

In conclusion, the President referred to the laws and practices in other countries and suggested some of the abuses that might, and must, arise from the continuance of the practice of self-dispensing in England.

After the usual routine business, consisting of the presentation of delegates, reports of committees, and of delegates to other conventions, the reading of the papers was proceeded with.

Preparation of Absolute Alcohol.—Prof. Sydney Young, D.Sc., F.R.S., described a method of dehydrating alcohol which depends

on the fact that when a mixture of alcohol, benzene and water is fractionally distilled, the last portion of the distillate consists of that component which was present in excess, irrespective of the boiling point of the several liquids. There is practically no loss of either benzene or alcohol, as the constituents of the several fractions are readily separated by suitable means, and no secondary products are formed.

Pharmaceutical Institute of the University of Berlin, by Prof. H. Thoms, Ph.D.—This paper, liberally illustrated by means of lantern slides, was presented by Mr. Peter McEwan, and was acknowledged to be an object lesson of the thoroughness with which educational matters are undertaken in Germany.

Determination of Uric Acid in Urine.—A. F. Dimmock, M.D., M.R.C.S., L.S.A., and F. W. Branson, F.I.C., F.C.S., suggest that the urine be warmed to about 40° C., then saturated with ammonium chloride, and the precipitate of ammonium urate allowed to subside; this, after separation, is washed with a very dilute solution of ammonia. The precipitate is subsequently treated with sodium hypobromite solution in a specially arranged nitrometer.

Comparative Anatomy of the Barks of the Salicaceæ. Part I. By Pierre E. F. Perrédès, B.Sc., F.L.S., Ph.C.—After making some introductory remarks on the general anatomical features of the barks of the natural order Salicaceæ, the author gave a detailed description of the bark of eleven species of populus. This description was accompanied by a great number of characteristic illustrations. A detailed description of the willow barks is to be published later as Part II.

Willows Used in Pharmacy.—E. M. Holmes, F.L.S., gave an interesting account of the different species of the genus salix, known respectively as willows, osiers and sallows. The author also recounted some of the uses to which they were put, and enumerated the kinds of bark that are known to yield salicin.

In referring to the yield of salicin, Mr. Holmes said that this principle being soluble in water, the bark naturally loses its strength if allowed to get wet; then, too, it has been observed that the bark loses salicin by keeping. This possible deterioration has led to a combination of manufacturers setting up chemical works close to the area of production of the more desirable willow bark in Belgium.

Thermal Waters of Bath.—W. J. Hallett, M.P.S., gave an outline

of the history, theory of causation, physical characters, origin of the constituents, and also some data on the heat or temperature and the reputed efficacy of the waters of these well-known thermal springs.

In describing the physical characters Mr. Hallett said that the quantity or quality of the water never varies; the three springs have a daily yield of 507,600 gallons of water at a constant temperature of 120° F.

Compressed Tablets, by Edmund White, B.Sc., F.I.C., and Mr. Henry Rodwell.—This paper was practically an elaboration of a paper presented to the conference in 1902, by White and Robinson (A. J. P., 1902, p. 571), and involves the use of oil of theobroma as an excipient for granulating powders.

The objections, of excessive bulk, made to the method proposed last year, have been overcome in a measure by the use of either of the following mixtures:

No. 1, Theobroma Emulsion: Oil of theobroma, 25 parts; hard soap, 5 parts; tragacanth, 0.5 part; benzoic acid, 0.25 part; water, to make 100 parts.

Dissolve the soap in 25 parts of water by heat, add the hot solution to the melted oil of theobroma and mix by whisking or agitation; shake in the tragacanth, add the benzoic acid, then the remainder of the water.

No. 2, Ether-Alcohol Solution of Theobroma: Oil of theobroma, 1 part; ether, to make 6 parts.

Dissolve the oil in the ether and add an equal volume of alcohol when required for use.

For granulating powders, the required amount of the more desirable solution is mixed with the fine powder, in a suitable mortar, and the moistened material passed through a coarse sieve; it is then allowed to dry by exposure. The authors give a number of typical formulas illustrating the use of the two solutions.

Liquor Rhei Concentratus B.P.—Mr. F. C. J. Bird stated that only about 60 per cent. of the total available extractive of rhubarb root is contained in the preparation. The author suggested the evaporation of about 15 per cent. of the last percolate, and dissolving the soft extract in sufficient glycerin to make up the required bulk.

The resulting preparation is said to keep perfectly clear at all temperatures and to be perfectly miscible with water.

Liquor Sennæ Concentratus B.P.—Mr. F. C. J. Bird said that the

official process was quite unsatisfactory and suggested the use of chloroform water in place of distilled water, to extract the drug, subsequently heating the resulting percolate to 180° F. to drive off the odor of chloroform. The author also proposes to increase the amount of alcohol in the finished product.

Chemical Examination of Ko-Sam Seeds.—Frederick B. Power, Ph.D., and Frederic H. Lees, said that ko-sam seeds (sometimes written khô-sam) are the product of *Brucea Sumatrana* Roxb., Fam. *Simarubaceæ*. The seeds are relatively small, thirty weighing about 1 gramme; when crushed, they develop a peculiar cheese-like odor, and have an intensely and persistently bitter taste. Among the constituents the authors found: tannin 1.8 per cent., a fatty oil about 20 per cent., two bitter principles, neither of them quassin. No alkaloids were found.

A False Cuspari.—Evelyn W. Pollard, B.Sc., called attention to a quantity of bark that had been offered in 1902 as cuspari. Samples of this bark were found to be identical with a false cuspari-bark described by Barclay, in Southall's *Materia Medica*. Mr. Pollard also made an exhaustive histological and chemical examination of the bark and found it to be quite different from cuspari in every respect.

Compound Tincture of Benzoin.—Alfred Knight, A.K.A., A.A., made quite an exhaustive report on the variation in extractive of the commercial tincture. From his investigations and experiments the author concludes that the requirement of 180 grammes of extractive per litre of tincture would be reasonable.

The Future of Pharmacy.—Mr. Leo Atkinson asserted that pharmacy cannot be conducted on competitive lines without serious risk to the public. The author also expressed the belief that when the commercialization of pharmacy had once been accomplished there would exist a public danger that would lead to prompt legislative reform.

Balearic Botany.—J. White, F.L.S., described a large number of medicinal and other plants collected, or seen, during a visit to Balearic Isles in the spring.

Crystals in Extracts.—F. H. Alcock, F.I.C., stated that crystals of potassium chloride, potassium nitrate, calcium oxalate, potassium dihydrogen phosphate and calcium tetrahydrogen phosphate, had all been found in various extracts. The author believes, therefore,

that it is never safe to assume that all extract crystals are one and the same substance.

Hyoscyamus Muticus.—F. Ransom, F.C.S., and H. John Henderson, Ph.C., found 0.9 per cent. of hyoscyamine in the drug, consisting mostly of the leaf, with small proportions of leaf stalks and seed capsules. A sample of the seed capsule contained 0.585, and a sample of the light brown stalks, with some leaves, contained 0.498 per cent. of the alkaloid.

This paper also included a note by Mr. Ernest Floyer, member of the Egyptian Institute, who stated that *Hyoscyamus muticus*, or "sakran," "the drunken," when grown in the Nile Valley, makes large, succulent leaves, but has few seeds. When grown in coarse sand, sometimes as many as 5,000 seed pods will ripen, each pod containing about 100 seeds. The plant in the Nile Valley is an annual, while above the line of the annual floods, it will live from three to five years, giving each year more seeds and fewer leaves.

Quantitative Separation of Strychnine from Quinine.—E. F. Harrison, B.Sc., and Mr. D. Gair, gave a résumé of various methods, which have been suggested from time to time, to estimate the amount of the alkaloids in such preparations as Easton's syrup.

The authors give their preference to a method in which quinine, as the acid sulphate, is treated with sodium potassium tartrate, and separated as tartrate. The strychnine is separated in the usual way, by treating the filtrate with ammonia and washing with chloroform.

Volumetric Use of Fehling's Solution.—By E. F. Harrison, B.Sc., who proposed the use of iodine as an indicator. The necessary solution is prepared by boiling 0.05 gramme of starch with a few c.c. of water, adding 10 grammes of potassium iodide and diluting to 100 c.c.

For use, 0.5 or 1 c.c. of this solution is taken, acidified with from 5 to 10 drops of acetic acid and 1 drop or more of the titration liquid added; as long as unreduced copper is present, a color is produced, varying from red to blue, depending on the amount of cupric salt still unchanged. The absence of color marks the end of the reaction.

A Comparison of Dietrich's Process for the Determination of Morphine in Opium with that of the British Pharmacopœia.—Mr. Harold E. Mathews, after recounting a number of comparative tests that he had made, concludes that while Dietrich's method is not so

exact as the B.P. process, it is more expeditious and involves less waste of opium.

A Proposed New Method for Standardizing Ferri Arsenas, B.P.—Wm. W. S. Nicholls, B.Sc., said that out of twenty-eight samples examined no less than eleven, or 39 per cent., were below the minimum (10 per cent.) of anhydrous ferrous arsenate, as required by the B.P.

For standardizing ferri arsenas, the author proposes to separate the arsenic as AsCl_3 , by distillation, with a solution of iron perchloride in strong hydrochloric acid. The distillate, after three distillations, is neutralized with a strong solution of caustic soda, an excess of sodium bicarbonate is added and the resulting solution is to be titrated with $\frac{N}{20}$ iodine solution.

A Concurrent Curriculum.—H. Whippell Gadd, F.C.S., suggested that theoretical instruction be combined with the practical training of the apprentices, and outlined a course of study of ten hours a week extending over the usual time of apprenticeship, three years.

Chloroforms of Belladonna and Aconite.—R. Wright, F.C.S., makes some suggestions for the improvement of these two British Conference Formulary preparations, in the course of which he recommends the addition of ammoniated alcohol to the chloroform to improve its solvent properties.

Refractive Index of Essential Oils.—Ernest J. Parry, B.Sc., thinks the refractive index of some oils, like otto of rose, oil of citronella, and oil of peppermint, is a useful factor in the determination of purity.

Agricultural and Horticultural Poisons and Fungicides.—E. M. Holmes, F.L.S., calls the attention of chemists and druggists to the necessity and importance of substances to be used as weed killers and insecticides, and thinks that pharmacists should endeavor to aid the Government by researches which will extend the list of non-poisonous substances to replace the poisonous compounds now used.

The Non-Existence of Mydriatic Alkaloid in Lactuca Virosa.—Messrs. J. O. Braithwaite and H. E. Stevenson were not able to confirm the claim made by Dymond, some years ago, that he had discovered hyoscyamine in the dried flowering plant of the wild lettuce.

The Pharmacology of the Suprarenal Gland.—J. C. McWalter, M.A., M.D., D.Ph., gives a method for preparing an efficient solution of the active principle from the fresh glands.

The formula is as follows: Fresh adrenal glands of the sheep, finely chopped, 50 parts; alcohol, 10 parts; acetic acid, 1 part; glycerin, 10 parts; distilled water, 30 parts. Macerate for three days, and filter the liquid through lint.

The author also notes that the adrenal gland of the heifer is more effective than that of the sheep, in the same strength solutions.

The official proceedings were brought to a close on Wednesday, July 29, when, after the transaction of the usual routine business, including the election of officers for the ensuing year and the usual vote of thanks to the officers and others that had contributed to the success of the meetings, the Conference adjourned to meet in Sheffield, England, in 1904.

M. I. WILBERT.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

AMERICAN POCKET MEDICAL DICTIONARY.—Edited by W. A. Newman Dorland, A.M., M.D. Fourth edition. Philadelphia and London: W. B. Saunders & Company. 1903.

Generally speaking, small dictionaries are the source of more annoyance than satisfaction, for usually the words about which one needs to consult a dictionary are not given. However, it must be said that in this book the author has given a rather comprehensive definition of quite a large number of terms used in medicine and the kindred sciences.

Attention is directed to a few inaccuracies. *Actæa* is defined as a "genus of plants furnishing cohosh and cimicifuga." It would be less confusing to state that *Actæa racemosa* is sometimes used as a synonym for *Cimicifuga racemosa*. In the definition of Darwinism the name C. R. Darwin should be replaced by the name Charles Darwin. The term lumen is defined as the "transverse section of a tube," which can hardly be said to make the meaning clear. Phloroglucin is stated to be used as a test for hydrochloric acid, whereas it is used in conjunction with hydrochloric acid principally as a test for lignin.

To those interested in personal name synonyms it may be pointed out that spirit of mindererus is given as "Minderer's spirit."

F. Y.

PERSONAL NOTES.

CHARLES EDWARD CASPARI has been elected Professor of Chemistry in the St. Louis College of Pharmacy. He was born in Baltimore, Maryland, and received his early education in the public schools of that city. In 1893 he entered the Johns Hopkins University, and in 1896 received the degree of B.A. Continuing the study of chemistry under the guidance of Professor Remsen, he took four years of post-graduate work at Johns Hopkins, and in June, 1900, he received the degree of Ph.D. During his last year at the University he was Professor Remsen's assistant. From 1900 to 1901 he taught organic chemistry at Columbia University, New York City. In September, 1901, he entered the employ of the Mallinckrodt Chemical Works, of St. Louis, where he has since been active in research work and directing their analytical department.

ALBERT SCHNEIDER has been elected Professor of Botany, *Materia Medica*, etc., in the California College of Pharmacy (University of California), to succeed the late Professor J. J. B. Argenti. Dr. Schneider had been for five years a professor in Northwestern University, and is the author of several works on botany.

RAYMOND H. POND succeeds Dr. Schneider as Professor of Botany and Pharmacognosy in Northwestern University. He was born in Topeka, Kan., in May, 1875. He graduated at the Kansas Agricultural College, receiving the degree of B.S. in 1898 and M.S. in 1899. He studied and pursued research work at the University of Michigan three years and received the degree of Ph.D. in 1902. He has had several years' experience as a teacher and has devoted most of his time to botany and chemistry.

WALTER BRYAN, Assistant Professor of *Materia Medica*, Botany and Pharmacognosy in the Brooklyn College of Pharmacy, has been chosen to fill the chair of Professor of Toxicology, Physiology and Hygiene in the same institution, made vacant by the resignation of Dr. Albert H. Brundage, as well. Dr. Bryan has been doing some special work in physiology during the summer under Professor Loeb, at the Marine Biological Laboratory, Wood's Holl, Mass.

W. L. CLIFFE has been appointed by the Governor of Pennsylvania a member of the Board of Pharmacy, to succeed H. E. Porter, of Tonawanda, whose term expired.

CHARLES S. ERB has been selected to fill the vacancy in the Eastern branch of the New York State Board of Pharmacy, caused by the resignation of Sidney Faber.

HERBERT J. WATSON has been appointed instructor in botany and pharmacognosy at the Philadelphia College of Pharmacy. Mr. Watson is a graduate of the College, and since his graduation has been associated with Professor Frederick K. Chester, of the Delaware State Board of Health.

JACOB S. BEETEM has been chosen Registrar at the Philadelphia College of Pharmacy. Mr. Beetem graduated from the College in 1878, and has been more or less identified with it since that time, having been President of the Alumni Association in 1895. For a number of years past he has been actively engaged in the drug business at Wilmington, Del.